

Application No.: 08/902,371
Filed: July 29, 1997

1 12. (Unchanged) An apparatus comprising:
2 a keyboard having a thermally conductive support plate, said support
3 plate having a substantially planar bottom surface;
4 a flat heat pipe attached to said bottom surface of said keyboard support
5 plate, a heat generating device thermally coupled to said flat heat pipe; and
6 air moving means for producing an air flow through a housing, at least a
7 portion of said housing being thermally coupled to said flat heat pipe.

1 13. (Unchanged) The apparatus of claim 12, wherein said flat heat pipe
2 comprises a plurality of micro-channels that are arranged parallel to one another.

1 14. (Unchanged) The apparatus of claim 12, wherein said air moving means
2 comprises a fan.

1 15. (Twice Amended) [The apparatus of claim 12,] An apparatus comprising:
2 a keyboard having a thermally conductive support plate, said support
3 plate having a substantially planar bottom surface;
4 a flat heat pipe attached to said bottom surface of said keyboard support
5 plate, a heat generating device thermally coupled to said flat heat pipe; and
6 air moving means for producing an air flow through a housing, at least a
7 portion of said housing being thermally coupled to said flat heat pipe, wherein

Application No.: 08/902,371

Filed: July 29, 1997

- 8 said housing includes at least one fin disposed in the path of said air flow, said
9 heat pipe thermally coupled to said fin.

- 1 16. (Unchanged) The apparatus of claim 14 further comprising a control
2 circuit for switching said fan on or off in response to a temperature measurement
3 on said keyboard.

- 1 17. (Unchanged) The apparatus of claim 14 further comprising a control
2 circuit for switching said fan on or off in response to a temperature measurement
3 of said heat generating device.

- 1 18. (Unchanged) The apparatus of claim 14 further comprising:
2 a temperature sensing device attached to said keyboard; and
3 a controller for receiving a signal from said temperature sensing device,
4 said controller switching said fan on or off in response to said signal.

- 1 19. (Unchanged) The apparatus of claim 14 further comprising:
2 a temperature sensing device attached to said heat generating device; and
3 a controller for receiving a signal from said temperature sensing device,
4 said controller switching said fan on or off in response to said signal.

Application No.: 08/902,371
Filed: July 29, 1997

1 20. (Unchanged) An apparatus comprising:
2 a keyboard having a thermally conductive support plate, said support
3 plate having a substantially planar bottom surface;
4 a flat heat pipe attached to said bottom surface of said keyboard support
5 plate, a heat generating device thermally coupled to said flat heat pipe;
6 a fan for producing air flow through a fan housing; and
7 a thermally conductive fin located within said air flow, said heat pipe
8 thermally coupled to said fin.

1 21. (Unchanged) The apparatus of claim 20 further comprising:
2 a temperature sensing device attached to said keyboard; and
3 a controller for receiving a signal from said temperature sensing device,
4 said controller switching said fan on or off in response to said signal.

1 22. (Unchanged) The apparatus of claim 20 further comprising:
2 a temperature sensing device attached to said heat generating device; and
3 a controller for receiving a signal from said temperature sensing device,
4 said controller switching said fan on or off in response to said signal.

1 25. (Unchanged) An apparatus comprising:
2 a keyboard having a thermally conductive support plate, said support
3 plate having a substantially planar bottom surface;

Application No.: 08/902,371

Filed: July 29, 1997

4 a flat heat pipe attached to said bottom surface of said keyboard support
5 plate, a heat generating device thermally coupled to said flat heat pipe; and
6 a fan for producing air flow through a fan housing, said fan housing
7 thermally coupled to said flat heat pipe.

1 26. (Unchanged) The apparatus of claim 25 wherein said flat heat pipe covers
2 at least about one-half of the surface area of said bottom surface of said keyboard
3 support plate.

1 27. (Unchanged) The apparatus of claim 25 wherein said flat heat pipe covers
2 substantially the entire surface area of said bottom surface of said keyboard
3 support plate.

1 28. (Amended) [The apparatus of claim 25] An apparatus comprising:
2 a keyboard having a thermally conductive support plate, said support
3 plate having a substantially planar bottom surface;
4 a flat heat pipe attached to said bottom surface of said keyboard support
5 plate, a heat generating device thermally coupled to said flat heat pipe; and
6 a fan for producing air flow through a fan housing, said fan housing
7 thermally coupled to said flat heat pipe, wherein said flat heat pipe has a first
8 end and a second end, said heat generating device is thermally coupled to said

Application No.: 08/902,371
Filed: July 29, 1997

9 flat heat pipe adjacent to said first end, and said fan housing is thermally coupled
10 to said flat heat pipe adjacent said second end.

1 29. (Unchanged) The apparatus of claim 25 wherein said flat heat pipe
2 defines an open area sized to accommodate a component of said portable
3 computer.

1 30. (Amended) [The apparatus of claim 25] An apparatus comprising:
2 a keyboard having a thermally conductive support plate, said support
3 plate having a substantially planar bottom surface;
4 a flat heat pipe attached to said bottom surface of said keyboard support
5 plate, a heat generating device thermally coupled to said flat heat pipe; and
6 a fan for producing air flow through a fan housing, said fan housing
7 thermally coupled to said flat heat pipe, wherein said flat heat pipe includes two
8 metal plates having respective first surfaces joined together and having
9 respective second surfaces, at least one of said metal plates being formed such
10 that a channel is formed between said first surfaces of said metal plates and a
11 protrusion is formed on said second surface of said formed metal plate, said
12 protrusion corresponding to said channel.